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ABSTRACT

A study of "Grateful Med," an interface to Medline, was conducted at California State University/Northridge to discover how efficiently students enrolled in graduate-level research methods classes in health sciences and communicative disorders could access Medline using Grateful Med, what the average costs would be, and how frequently students needed access to Medline's backfiles. Students were given one page of searching instructions and a one-page form for purchasing Grateful Med software and acquiring a National Library of Medicine (NLM) student access code. Students who used the library's funded access code were asked to complete a two-page evaluation form (68 of 73 were returned). Data were correlated to the type of instruction received as well as the users' previous computer experience. It was found that almost all of the students were interested in learning how to use the software and found it easy to learn. Analysis of the evaluation forms indicate that in-depth training including hands-on use of the software gave the highest levels of satisfaction. Any prior computer experience increased the level of satisfaction. Approximately 37% of the students indicated they would acquire their own NLM access codes. Four tables and three figures--including the evaluation form--are provided. (15 references) (SD)

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A Study of GRATEFUL MED Use in A Graduate Health Program

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A STUDY OF GRATEFUL MED USE IN A GRADUATE HEALTH PROGRAM

ABSTRACT

A study of GRATEFUL MED use by 68 students enrolled in graduate level courses at California State University Northridge showed that 97% of the students liked searching MEDLINE using this front-end software. The classes, the instructional methods, and the research methodology are described. Data collected from students' evaluation forms indicate in-depth training including hands-on use of the software gave highest level of satisfaction. Students who had previous experience with computers felt the most comfortable with the software. Over 75% of the students needed literature published before 1986. Many of the students planned to obtain their own National Library of Medicine (NLM) access codes and Grateful Med software. Recent experience shows students' preference for using MeSH on DIALOG's CD-ROM. Future studies will examine students' ability to use both Grateful Med and MEDLINE CD-ROM for exhaustive research.

In the last few years end-user searching has become increasingly popular. The host of new information technologies offers an interesting challenge in library instruction. This is especially true when instructing graduate level classes where students usually have an immediate, exhaustive research need, as well as a need to learn how to search on system(s) which can be used once they leave the university environment. Several recent articles on end-user searching [1,2,3,4] describe the various online sources for the MEDLINE databases. The system chosen for student use was National Library of Medicine's (NLM's) reduced rate student program and the inexpensive, well-reviewed [5,6,7] front-end, telecommunication software, Grateful Med.

BACKGROUND AND PURPOSE OF STUDY

A study of Grateful Med use by California State University Northridge(CSUN) students was conducted Spring 1988; this study was funded by a CSUN Faculty Affirmative Action Grant of $500. The purpose of the study was to investigate Grateful Med software's potential for students. CSUN had a long tradition of offering librarian mediated MEDLINE searches on a cost recovery basis. When first introduced, MEDLINE searching with Grateful Med software was the only end-user program CSUN library had for searching the professional, medical literature. Although the library had begun to acquire some CD-ROM products, funding for a range of databases

plus the necessary equipment was a slow process. A study of Grateful Med was a good opportunity to study the use of a system which would also be offering the students lifelong skills. We specifically wanted to find out how efficiently students can access MEDLINE using Grateful Med, what the average costs would be, and how frequently students needed access to the backfiles. The students chosen for the study were health science and communicative disorders students enrolled in research methods classes. All students were given one page of searching instructions and one page of order information for Grateful Med purchase and for acquiring a personal student access code. Those students who returned to use the library's funded access code were asked to complete a two-page evaluation form. Although the Grateful Med software was demonstrated to eight classes, only four classes, (seventy three students), received instruction with the expectation that many of these students would return to use the library's software and funded access code.

Sixty-eight evaluation forms were returned. Data collected on three variables (cost, relevant retrieval, user satisfaction) were correlated to the type of instruction received as well as previous computer experience of the patron.

CLASS DESCRIPTIONS

All of the classes received instruction on the structure of Medical

Subject Headings (MeSH) and on basic principles of specific concept indexing. All students were urged to consult MeSH first, and then to check the printed Index Medicus before going online. All students were encouraged to select search terms, whenever possible, from Grateful Med's MeSH. The use of the <F10> function key was clearly emphasized in all classes. This approach, emphasizing controlled vocabulary, continued the traditional instruction for the use of printed Index Medicus. Considering the large size of the classes, and the brief amount of available instructional time, students needed to learn the most efficient way to retrieve relevant citations. Additional instructional methods and evaluating relevancy were described in recent articles on Grateful Med use [8,9,10] and on MEDLINE end-user training [10-12].

The four classes received various levels of instruction. The first class to receive instruction on Grateful Med was the Research Methods Class in Communicative Disorders. The professor wanted a 2 1/2 hour lecture covering all phases of library research. The class received a ten minute demonstration of Grateful Med software using a 19" Sony color monitor and an IBM XT with a 1200 baud modem. The professor's assignment was to prepare bibliographies on two topics using both the printed index and MEDLINE using Grateful Med. Since this lecture did not emphasize the mechanics of the Grateful Med software, the librarian was available when the students used the software for further individualized instruction.

The class of thirty had a deadline of one week, this meant that thirty students, researching two topics each, had to schedule computer time within a seven day interval.

The second class, a Research Methods Class for physical therapy students, received a two-hour lecture. For this class, arrangements were made with the computer center to use the microcomputer laboratory where students could actually use the Grateful Med software to formulate a search. Since the PCs did not have modems, students only experienced the input of the search strategy. The first eighty minutes were given in the same classroom where the Communicative Disorders Research Methods class received their instruction. The same equipment for the online demonstration was used. The last half hour was given in the microcomputer laboratory so students would have hands-on experience. Although instruction on Grateful Med was given to the entire class of thirty nine students, only a small fraction of those were expected to return to use the software installed on the PC with modem for student use. The class had been divided into topic groups and only one person from each group was to schedule computer time. However, the entire class exhibited strong interest in learning how to use Grateful Med. Only one student chose not to participate in the second session in the microcomputer lab. This meant, however, that each PC had to be shared by two students. Group topics were the semester's research problem. The literature search was just one

phase and had no immediate deadline.

The third class, a Research Methods Class for graduate health science students, was given a 2 1/2 hour lecture at an off-campus site. The classroom was not equipped for demonstrations so the lecture was done using an overhead projector for examples. Again, the structure of MeSH, was emphasized. Since these graduate students do not have a library available at the campus where they take classes, the classroom instruction did not include an overview of a variety of printed indexes and abstracts that would be relevant. The entire time was devoted to searching for information online, mostly searching MEDLINE using Grateful Med, but other online services were mentioned. The facility had two PC clones with modems. The class was advised that they would need to bring floppy disk(s) to download searches. Two sets of disks with separate passwords were left as well as a copy of MeSH, and one issue of a monthly Index Medicus. This third class was unique in that they did not receive the traditional library lecture explaining the printed resources available to them. They were given the most intensive instruction on the structure of MeSH and the organization and access points of the MEDLINE database. The last hour was devoted to "hands-on" instruction but it was held in a very small room that had only two microcomputers. This arrangement allowed only two students at a time with a maximum of six observers. The first attempts including logon connection and

display of retrieval took about twenty minutes so that only two sets of students, four people, had the hands-on experience. The observers changed places so that most members of the class were able to see at least a fraction of the full search session experience. Since this last hour of instruction was incomplete for most of the class, the three hours instruction time reflects more the instructor's involvement than the class participation.

The fourth class was a graduate course in audiology. There were only four students in the class and they, independent of their professor and scheduled class time, set up a two-hour lecture with the librarian. Their specifications were to learn how to search MEDLINE using Grateful Med. The librarian gave the lecture in the usual library classroom. The four students used the classroom demonstration PC with modem for hands-on experience. The lecture on structure of MeSH and Index Medicus was comparable to the ones given to the first two classes.

METHODOLOGY AND DATA ANALYSIS

The XT microcomputer station in the science library had a custom log program installed that tracked the total time the students used the computer, including search formulation time, on-line time, and time to evaluate and print the citations. The log also requested

information on name, class, topic, and cost of search, and a reminder to fill out the evaluation form. An example of the information collected by the computerized log is in FIGURE 1. Table 1 tabulates total times recorded on the log for two of the classes, the total cost, and the average cost. Log data for the communicative disorder's class was incomplete because the log program was not working properly the first weekend when most of the students did their searches. For those students the study has data on costs from the returned evaluation forms and is reported in Table 2. Students were also asked to estimate number of relevant citations retrieved and the number of citations they actually printed; the results are given in TABLE 2.

Table 3 reflects use of two groups divided by two criteria, "naive" vs. "experienced." In terms of intensity of Grateful Med instruction, the communicative disorders class (CD) would be considered "naive" since they only received a classroom demonstration. The physical therapy (PT) students were considered experienced since their instruction included a "hands-on" microcomputer lab. There were so few returned evaluation forms from the audiology (AUD) and health science (HS) classes that most times they are excluded from the results. Table 4 was generated when a review of the data showed that students who indicated previous experience with computers were all in the communicative disorders class. Studying just the communicative disorder's class

it would seem that the data collected indicates the higher levels of satisfaction, the ease in learning and using the system with less need of further training is correlated to the amount of previous computer experience.

DISCUSSION

The majority of students indicated they needed further training. Similar results were reported by Ludwig's study of Medis use [13]. In the case of Grateful Med, version 3.0, the students were insecure about the proper selection of MeSH terms. Reinforcement of this conclusion was gained when near the end of this study on Grateful Med, the library received a thirty day trial copy of DIALOG's MEDLINE OnDisc product. Students who had previously used Grateful Med commented on how much they liked to choose terms from the DIALOG software's dictionary over the Grateful Med's MeSH. The students much preferred the way DIALOG shows retrieval for each term, gives cross references for MeSH, and lists retrieval for MeSH terms with subheading(s).

When this study was undertaken it was realized that the likelihood of using Grateful Med as a sole research tool in a busy reference environment was highly improbable. Several factors were considered. Primary was the not always reliable telephone lines. Other factors were the downtime of the NLM computer, and the

uncertainty of the costs involved offering an online service as a research tool for students. However, the Grateful Med study did show that students frequently liked to search previous years. Figure 2 shows the distribution of student usage of MEDLINE files by years. [FIGURE 2.] An interesting sideline, however, is that once the MEDLINE CD-ROM was installed which offered 1987 with the option of also switching to the current year (Jan.-June 1988), most of the students were happy with the retrieval from 1987. The CD-ROM was received at the end of the semester so it is doubtful whether these students are a representative sample of the research activity which occurs earlier in the term. However, their use complies with Capodagli's observation of patrons' use of Compact Cambridge as "fulfilling a basic need ... for a few good recent articles" and Glitz's report that only a few patrons requested more years. [14,15]

A study of the computerized log in Figure 1 indicates the students were rarely online longer than a few minutes, but occupied the microcomputer station for much longer periods of time. Although the average costs from the evaulation forms do not exactly match the averages from the computerized logs, the data from the Physical Therapy class with about the same number of people reporting are fairly close. Any projection of costs for a Grateful Med search station in an academic environment would have to rely on students continuing to selectively print relevant citations from the

retrieval thereby occupying a search station for greater lengths of time.

The high percentage of use of MEDLINE back files indicates that students involved in serious research would access the older literature. Although MEDLINE on CD-ROM is also enormously successful, students who own their own computers or will soon leave the academic environment are very interested in learning how to use Grateful Med. Twenty- five students indicated they would obtain their own NLM passwords, and sixteen planned to purchase the Grateful Med software.

CONCLUSIONS

After studying the use made of Grateful Med by a variety of students, with and without previous computer experience, and with varying degrees of instruction in actual use of Grateful Med, several observations are appropriate. Almost all students were interested in learning how to use the software and found it easy to learn. Any prior experience, either in general computer use, or specifically, Grateful Med use, increased the level of satisfaction. Students were able to use the Grateful Med software effectively. Twenty-five students indicated they would acquire their own access codes. Further research on the use of Grateful Med as an adjunct to a current MEDLINE CD-ROM product would study

students' need for older literature and their willingness to learn and use different search protocols.

Table 1

Search Time and Costs from Computerized Log

	CD[4]	PT[9]
Time (hours:minutes)	2	5:38
Cost	$10.89	$28.31
Average cost	2.75	$3.11

TABLE 2

Comparison of the Four Classes (Evaluation Forms)

	TOTAL [68]	CD[34]	PT[10]	AUD[2]	HS[4]
% relevant	62%[43]	59.5%[28]	49%[8]	na	na
% printed	65%[66]	76.7%[34]	59%[9]	89%[2]	21%
average cost	3.59[67]	3.26[33]	3.29[10]	4.44	5.79[4]

TABLE 3

Comparison of Experienced vs Naive Computer Users (Evaluation Forms)

	Computer Access [25]	No Computer Access [40]	PT class[10]	CD class [34]
% Require further training	52%	67%	30%	67.6%
easy to learn	95.4%	86.8%	100%	91.2%
easy to use	99%	92.1%	90%	94.1%

TABLE 4

Comparison of Computer Experienced vs. Naive (CD class,Evaluation Forms)

	Require Further training	Easy to Learn	Easy to Use
Computer Access	54.5%	100%	100%
No Computer Access	75%	85%	90%

FIGURE 1

Example of Information Recorded by Computerized Log

Logon Date	Logon Time	Lib	Patron	Course	Topic	Access Time	Cost
02/16/88	15:40:14	mh	envoldson	cd573	aphasia	00:32:59	$4.88
02/23/88	14:15:49	mh	weismann	cd574	otitis	00:15:20	$1.82
02/25/88	14:09:25	mh	strong	hs497	knees	01:14:05	$5.46
02/25/88	15:25:13	mh	spalding	hs497	running&knee to	00:36:33	$2.78
03/02/88	15:49:25	mh	burkhart,ste	hs594	juvenile delinq	00:33:06	$3.26
03/06/88	11:25:11	mh	low, sheryl	hd594	cerebral palsy	01:47:16	$8.45
03/09/88	13:51:34	mh	farrenkopf	hs497	aerobics	00:31:16	$1.46
03/09/88	14:28:32	mh	newton	hs497	wound therapy	00:29:54	$1.25
03/09/88	15:01:44	mh	roller	hs497B	aerobic	00:24:23	$3.05
03/11/88	13:54:00	mh	newton,p	hs497b	wounds	00:28:44	$3.28
03/12/88	09:44:08	mh	heine	hs497	aids attitudes	00:10:55	$0.55
03/12/88	10:22:08	mh	heine, elina	hs497	aids &health wo	00:19:06	$1.52
03/17/88	17:44:36	mh	taliaferro,m	cd574	cohlea implants	00:37:45	$3.22
03/25/88	13:52:42	mh	weisman,holl	cd574	audiomentry	00:49:34	$5.67
03/31/88	14:59:07	mh	nikki washla	cd573	language norms	00:23:05	$2.62
03/31/88	15:25:15	mh	mosesson,j	hs497	spinal atrophy	01:08:25	$4.51
04/07/88	14:16:34	mh	guiteras,p	hs497	brainstemenceph	00:13:53	$1.08
04/29/88	12:27:04	mh	jaeger,gretc	cd573	early int.deaf	00:17:52	$3.39

FIGURE 2

YEARS OF FILES SEARCHED

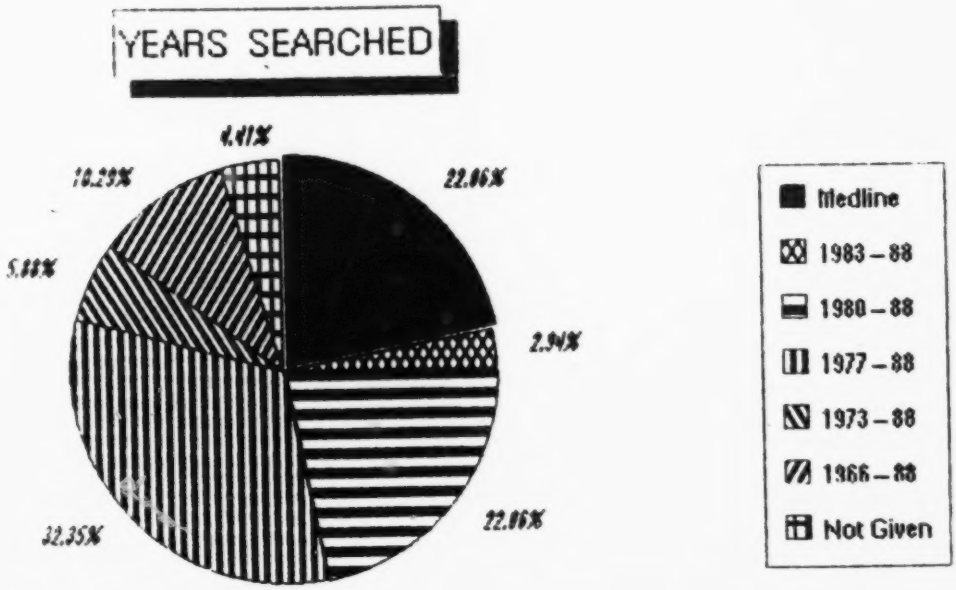

FIGURE 3

EVALUATION FORM

SEARCHING NATIONAL LIBRARY OF MEDICINE'S
MEDLINE OR HEALTH DATABASES
USING
GRATEFUL MED SOFTWARE

A. Please answer the questions below: Circle One

1. Is this the first time you have performed a computer search yourself? If you circled No, what other search systems have you used? _____ Yes No

_____

2. Was this search system easy to learn? Yes No

3. Did you read the instructions? Yes No

Did you use the online help instructions? Yes No

Comment on any weaknesses or omissions in either the written or online instructions

_____

_____

3 Was this search system easy to use? Yes No

4. Were you satisfied with the results? Yes No

(1) How many citations did you retrieve? _____

(2) How many of those were relevant? _____

(3) How many citations did you print? _____

(4) Did you ask for abstracts? Yes No

(5) Which database did you search? ___MEDLINE ___ HEALTH

(6) What years did you search? _____

*** (7) How much did your search(s) cost? (give total) _____
Use log, number D. on other side, to record each search

5. Did you consult the printed indexes (Index Medicus, Hospital Literature Index) before doing the computer search? Yes No

6. Did you consult Medical Subject Headings (MeSH)? Yes No

If you circled Yes, did you choose MeSH headings

(1) Using the F10 function key Yes No
(2) Typed them in using a forward slash (\) Yes No

7. Would you use this system again? Yes No

(1) If Yes, will you apply for your own password? Yes No
(2) Will you purchase the Grateful Med software from NTIS? Yes No
(3) Do you think you require further training? Yes No
(4) Do you own or have access to an IBM pc (or pc compatible) with modem? Yes No

B. Please describe your search topic (Very important to answer this)

C. Circle one: CSUN Faculty
CSUN Graduate School Student
CSUN Undergraduate Student

Department: _____

Your Name:
Date and Time:

D. Record the cost, number of citations retrieved and years searched. When you are finished with all your searches, add the total costs and record total in *** 4 (7)

Database	COST	# citations retrieved
Medline		
Back years (which one?)		
Health		

D. Additional Comments?

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